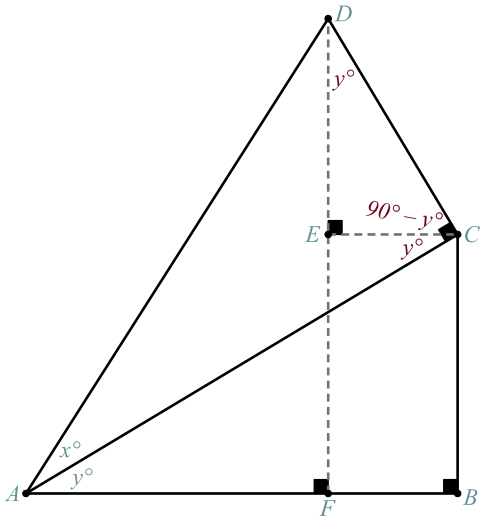
INTO THE UNKNOWN: SINE (SAMPLE RESPONSES)

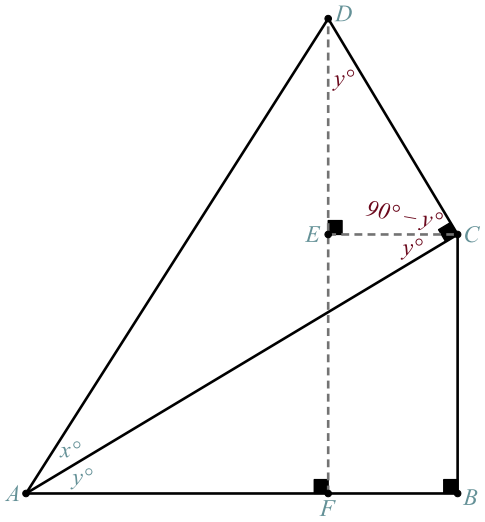


Step 3: Teamwork

Put your pieces of information together to find the identity. Let $\overline{AD} = 1$.

$$\begin{aligned}
\sin(x+y) &= \frac{\overline{DF}}{1} = \overline{DF} \\
&= \overline{DE} + \overline{EF} \\
&= \overline{DE} + \overline{BC} \\
&= \overline{DE} + \overline{AC} \cdot \sin(y) \\
&= \overline{DE} + \cos(x) \cdot \sin(y) \\
&= \overline{CD} \cdot \cos(y) + \cos(x) \cdot \sin(y) \\
&= \sin(x) \cdot \cos(y) + \cos(x) \cdot \sin(y)
\end{aligned}$$

INTO THE UNKNOWN: COSINE (SAMPLE RESPONSES)



Step 4: Teamwork

Find the identity for $\cos(x+y)$. Let $\overline{AD}=1$.

$$\begin{aligned}\cos(x+y) &= \frac{\overline{AF}}{1} = \overline{AF} \\ &= \overline{AB} - \overline{BF} \\ &= \overline{AC}\cdot\cos(y) - \overline{CE} \\ &= \cos(x)\cdot\cos(y) - \overline{CD}\cdot\sin(y) \\ &= \cos(x)\cdot\cos(y) - \sin(x)\cdot\sin(y)\end{aligned}$$